Strategy Research Project

LET SLEEPING DOGS LIE: NATO NUCLEAR POLICY SINCE 1991

BY

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LET SLEEPING DOGS LIE:
NATO NUCLEAR POLICY SINCE 1991

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ABSTRACT

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With the ongoing reinvigoration of the U.S. nuclear enterprise, the time is right for a reevaluation of the U.S. involvement in NATO strategic operations. The U.S. can fulfill its obligations to the treaty without dedicating Dual Capable Aircraft (DCA) to the alliance. There are many benefits to fulfilling the nuclear deterrence mission with other assets. Ideally, the replacement systems would have singular roles and less vulnerability. The obvious implications include political ramifications of removing/reallocating assets, adjusting our “seat at the table” due to a possible perception of a reduced emphasis/effort, and the potential fallout due to our loss of that capability.

LET SLEEPING DOGS LIE, NATO NUCLEAR POLICY SINCE 1991

Over a decade after the collapse of the Soviet Union and the Warsaw Pact, the U.S. and North Atlantic Treaty Organization (NATO) are clinging tightly to the same nuclear policy they used at the height of the cold war. Equipment dependency and coupling agreements inextricably tied the nuclear capabilities of NATO to those of the U.S.: U.S. nuclear issues are NATO nuclear issues. While treaties and Presidential Nuclear Initiatives (PNI) have reduced the numbers of weapons deployed in theater, the underlying policy and strategy remain largely unchanged. Amplifying the tendency towards inaction, the lack of priority and emphasis by the participating nations has led to an atrophy of the NATO nuclear enterprise. A number of embarrassing missteps by its nuclear forces marks the level to which it sank, culminating in the removal of the U.S. Air Force Chief of Staff and Secretary[1].

The shakeup of the U.S. Air Force leadership marked the beginning of the revitalization of the entire U.S. nuclear enterprise. This new emphasis and the corresponding budgetary priority mark an ideal time to realign U.S. nuclear forces and capabilities, and those of NATO, with an eye to the future. Policy makers are in the position to decide whether we are going to focus our resources on stringing along the old cart and horse or focusing on the long term by buying a new hybrid vehicle. With the former, the U.S. and the other alliance members end up with an obsolete mode of transportation, shiny but obsolete (and in the business of deterrence, obsolete equals defeat).

Nuclear Deterrence Terms and Theory

In order to have a useful dialogue on nuclear policy one must have or obtain a solid grasp on the nuclear vernacular. Along that vein, the terms deterrence and compellence require definition. These terms are important because it is widely agreed upon that the primary utility of nuclear weapons lie in their deterrent value, with the residual value lying in compellence (though many contest the compellence value of nuclear weapons).

Deterrence is the integrated, systematic effort to exercise influence over an adversary's decision calculus in peace, conflict and, war.[2] Deterrence is the art of producing, in the mind of the enemy, the fear to attack![3] It affects the "what happens if" portion of risk assessment that may tip the balance from "it is worth a try" to "not worth the cost if I am wrong". In order for a deterrent to effective, it must possess the three "C"s, in which the threat of its use is clear, credible and capable. The Nuclear Weapons States (NWS) must clearly communicate to the target that they intend to use nuclear weapons under certain circumstances. At the same time, there is still a place for strategic ambiguity, though not indecision. The difference being that there must be no doubt that one must not cross the line. The actual left and right boundary may be a bit fuzzy but there is no doubt about the existence of the line. Additionally, the adversary must consider the uncertainty regarding the exact response they will receive which will influence their conflict calculus.[4]

Deterrence must also be credible. The deterred party must believe the deterring force *will* execute the nuclear attack if the line is crossed, believing the deterring force has the will to execute.[5] To that end, the deterring force must provide its political

deciders with viable options that they could conceivably execute.[6] A deterrent force comprised entirely of sledgehammers is not really a credible deterrent to the fly buzzing around the china shop. Multi-leveled options are critical to deterrence, as massive retaliation may not be appropriate under all circumstances and if other levels of response are not available then the NWS may self-deter.

Historically, it has been thought that NATO's European nations would elect to *self-deter*, or withhold the use of nuclear weapons, out of fear that a limited exchange would occur, resulting in the devastation of Europe (better Red than dead).[7] A more contemporary example would be the hesitancy to use nuclear weapons on a Non-Nuclear Weapon State (NNWS), or non-state actor for that matter, even in the event that they employ other Weapons of Mass Destruction (WMD). Coalitions and alliances have a tremendous potential to self-deter, as attaining the alignment of the interests of multiple nations has become more and more difficult due to political considerations.

Finally, the deterrent must be capable. The deterring nation must possess the actual infrastructure that places the deterred nation at risk. They must have a reliable, accurate, and survivable system available that can provide the desired effect when and where needed. Again, the NWS must deliver the promised response if the line is crossed: technical malfunctions and/or failed missions are not an option.

That said, NWS seeking to deter do not have to convince aggressor nations they have firm plans to employ; the burden of proof lies with the aggressor to be sure there is absolutely no prospect of a nuclear response by the NWS (one reason why strategic ambiguity is so effective).[8] Simultaneously, a credible deterrent capability may or may not be a credible tool for compellence.

Strategic leaders must understand compellence, as the second key concept, if they are to consider how to shape nuclear policy. Compellance is the act of making an adversary act through the threat of force. As an example, pointing a gun at a person and saying “don’t run or I will shoot” is deterrence. Performing the same action and saying “run or I’ll shoot” is compellence.[9] Compellence is inherently less effective than deterrence, and in the end if the adversary does not comply the desired action does not get accomplished, leaving the NWS in the same place they started (or possibly worse off if their credibility is lost). A delicate balance of deterrence and compellence was necessary to ensure the U.S. and NATO were each able to protect the west from the Soviet Union and the Warsaw Pact.

NATO’s Nuclear Legacy

The North Atlantic Treaty Organization (NATO) is a military alliance established on April 4, 1949 by a collective body of Western European and North American nations, in response to the degradation of relations between the west and the Union of Soviet Socialist Republics (USSR). Those nations founded the organization to counterbalance the large conventional armed forces and expansionist ideology of the Soviet Union.

In August of 1949, the Soviet Union detonated its own nuclear bomb and the organization took on a pivotal nuclear role. With the signing of the Nuclear Non-Proliferation Treaty (NNPT) in 1968, the list of NWS was frozen and the remaining NATO nations would fall under the extended deterrence provided by Great Britain, the U.S., and to a lesser degree, France. That is to say, that the deterrent forces of the NWS provided the same nuclear deterrent to an attack on the non-nuclear weapons

states (NNWS).[10] As signatures to the NNPT, the remaining NNWS in NATO renounced their right to develop and field nuclear weapons.

At the same time, the incorporation of the NNWS into the NATO nuclear deterrence structure was critical to the integrity of the alliance. Nuclear burden sharing is a concept in NATO's policy of nuclear deterrence, involving member countries without nuclear weapons of their own in the planning for the use of nuclear weapons by NATO, and in particular provides for the armed forces of these countries to be involved in delivering these weapons in the event of their use.[11] Currently the U.S. is the only "donor" nation, while Germany, Belgium, Italy, and the Netherlands comprise user nations. In order to comply with the NNPT, the U.S. maintains custody and control of all nuclear weapons until the point they are loaded onto the user nation aircraft for actual employment at which point the nations would officially withdraw from the NNPT.

Other non-nuclear NATO nations provide their portion of burden sharing by participating in mission planning, command and control, external base security, and other Support of Nuclear Operations with Conventional Aircraft Tactics (SNOWCAT) such as air to air refueling and defensive counter air. Widespread participation in nuclear roles and policy formulation demonstrates alliance cohesion and the sharing of responsibilities, and makes an important contribution to NATO's nuclear posture.[12] This integration of the European nations and the U.S. is critical to the coupling of the fates of the nations.

The term coupling refers to the inextricable linking of the fates of the allied nations with regard to nuclear war.[13] A policy challenge within the alliance lies in the fact that U.S. interests are best served by a policy that allows for a nuclear war to be fought

with tactical nuclear weapons and confined to Europe if possible, avoiding an escalation to a strategic nuclear war that would spill over to the continental United States or Canada. The European allies, on the other hand, endeavor to devise policy that would unquestionably escalate to a full-scale strategic nuclear war expeditiously, ensuring the U.S. will share their fate in the event of a nuclear conflict. This coupling of fates provides the NATO members with the assurance that the will of the U.S. is never in question.[14]

Post-Cold War Nuclear Adaptation

The end of the Cold War brought on by the fall of the Soviet Union caused dramatic changes in the Euro-Atlantic strategic landscape.[15] Each side adapted the forces, doctrine, and policies they had in place in response to the changing situation and the unknown world before them. Both sides reduced force structures drastically,

At the end of the cold war, the U.S. had approximately 23,000 total nuclear warheads, with about one third of those weapons Tactical Nuclear Weapons (TNW) in the form of artillery rounds, short-range missiles, gravity bombs, and TNW on Navy ships.[16] Following the Presidential Nuclear Initiatives (PNI) brokered by Presidents Bush and Gorbachev (and later Yeltsin), NATO and Russian nuclear forces went through a series of de-alerting and then reduction of nuclear forces.[17]

Through several iterations and decrees, the U.S. eventually eliminated all but about 600 of its TNW, which are all stored within the Continental U.S. (CONUS), with the exception of what experts assess to be approximately 200 gravity bombs designated for use by NATO.[18] This reduction amounts to a reduction of over 7,000 thousand TNW. The Russians have reciprocated, though not quite to the same degree, by reducing their TNW arsenal to slightly more than 2,000 TNW operationally deployed with another 3,000 in various stages of extended readiness.[19] This may seem like an

inordinately large number of remaining units, but one must realize that Russia started with over 21,000 TNW, and the destruction or demilitarization of nuclear weapons takes time and money, the latter of which was in short supply in Moscow in the 1990s. Add to that the Russians concern over the strength and purpose of the NATO conventional force, which has resulted in the determination to maintain approximately 2,000 TNWs. Russia will not even engage in talks regarding further reductions as long as U.S. TNWs remain in Europe.

Additionally, the former adversaries adjusted both posture and policy reducing the specter of nuclear war. NATO has shifted its forces readiness status from hours to months, and evolved its overarching targeting policy from a set playbook with known targets to a dynamic plan that emphasizes flexible response over mutual assured destruction. Russia in turn has drastically reduced the number of nuclear bases, and has reduced the status of alert for their forces as well.

The rate and magnitude of change in the early 1990s was truly amazing, as the PNIs had set the nuclear powers on a solid path to the future. Unfortunately, initial momentum slowed as the powers became comfortable with the status quo as the world evolved around them. While NATO's nuclear forces continue to play a role in war prevention, their function is now more than ever fundamentally political to preserve peace and prevent coercion.[20] Along that line of reasoning, the circumstances in which the allies would contemplate the use of nuclear weapons are extremely remote, which in turn reduces their deterrent value to near zero as the threat of their use is not credible.

Current state of affairs

Following Sun Tzu's theory "If you know the enemy and know yourself, you need not fear the result of a hundred battles", we will examine both the current threat and our own political and military state of affairs, as well as those of our allies.[21]

Threats

Had the world remained static, NATO's nuclear enterprise may have been appropriate. As we know, this is not the case. There are new NWS and aspiring NWS emerging in every corner of the globe. Non-state actors are evolving into larger and larger players on the world stage. The key to developing the nuclear enterprise of the future is to focus on the current threats, while maintaining adaptability in order to negate the evolving threats of the future. If NATO's nuclear force is going to remain relevant in the future, it must evolve in both doctrine and capability to meet those threats head on.

To simplify the analysis of the current and emerging threats it is necessary to break them down into groups with similar qualities. In that vein, we will initially look at conflict with and deterrence of state actors, both NWS and NNWS.

The primary role of nuclear forces is the deterrence of other nuclear forces during peacetime. That role is relatively simple, and our present force and posture are well suited for this mission. Our current nuclear enterprise has not evolved to confront the more difficult, yet more likely, scenario of conventional war with a nuclear adversary.[22]

The central problem for deterrence in the future is that even rational adversaries will have a powerful incentive to introduce nuclear weapons.[23] It is important to note that the "introduction of nuclear weapons" does not necessarily mean the detonation of a nuclear device: we also categorize the introduction of nuclear weapons as their use as a

coercive tool to either compel or dissuade action by an adversary through threats of use, increased alert posture, or “testing” of nuclear components.[24]

To an extent, we have created a desire on the part of future adversaries to consider nuclear weapons based on our conventional success. In recent history, no other nation or collection of nations could counter the conventional forces fielded by the U.S. and its allies. Examples of the use of this overwhelming conventional force played out in Afghanistan, Iraq, and Kosovo. One must also remember that while these conflicts were limited for the U.S., for our adversaries they were total war (at least from the view of the leadership). This adds an entirely new variable into the calculus a leader will take when weighing the cost versus benefit of introducing nuclear weapons.

The fate of recent adversaries sheds quite a bit of light on this reality: both Serbian leaders went to prison where one died, the new Iraqi government hanged Saddam Hussein, and the Al Qaeda and Taliban leadership lives on the run in the mountains of Afghanistan and Pakistan.[25] It should come as no surprise that future leaders placed in similar circumstances would use every weapon at their disposal (acting in a manner we would consider irrational), to prevent succumbing to a similar fate.

An additive incentive to an adversary’s introduction of nuclear weapons is the robustness of U.S. counter-force capability, both nuclear and conventional. This capability gives the NWS a “use it or lose it” characteristic which in turn may encourage an adversary to use their weapons before we have an opportunity to find and destroy them.

All of these dynamics make a conventional war with a nuclear-armed non-peer adversary the most treacherous scenario. In order to maintain a plausible deterrent, capable of deterring their use of nuclear weapons, we must develop and maintain a broad array of options, both nuclear and conventional. As mentioned above, if all we have is large yield devices, then the likelihood we would employ them in a limited engagement is suspect, which therefore diminishes the deterrent value. An adversary needs to be convinced that a retaliatory threat *will* be executed and therefore a deterrent force must provide decision makers with options that they *would* conceivably execute if the redlines were crossed.[26]

These lines of reasoning cross into the realm of non-state actors (NSA) as well. This scenario is, of course, the most politically charged and least well known. Under conditions where a NSA is state sponsored (an organization inextricably tied to a state, with known attachments and acknowledged influence), the conditions are similar to those of the state themselves. The burden of proof regarding the relationship is, of course, crucial to the decision-making calculus. Introduction of nuclear weapons under these circumstances is most likely going to be unilateral, as the development of a coalition willing to take group responsibility is highly unlikely. The majority of states will be more than willing to assume the role of free rider, reaping the benefits of the deterrent action without having to pay the political, moral or economic price. Within an alliance such as NATO where there are no free riders as all partners share the burden of employment, the likelihood of gaining consensus regarding the nuclear option is remote at best (even if a NSA used WMD on one of the members).

The bottom line is that NWS have, at best, a marginal ability to deter even state sponsored NSAs. It is hard to envision a scenario where nuclear weapons can prevent, deter, counter, or respond to the use of WMD of any kind by an autonomous terror organization. The greatest threat to the U.S. and its allies today is the crossroads of technology and radicalism,[27] and nuclear deterrence is out of the fight.

U.S. Domestic Policy and Defense Issues

From the early 1990s through the mid 2000s, the U.S. nuclear enterprise slowly deteriorated, primarily due to neglect. The individuals within the enterprise maintained their professionalism and dedication to the mission, but the national leadership and its institutions became distracted with other events. The wall had fallen, Europe was uniting, and Mutually Assured Destruction seemingly became a term for the history books. The U.S. and its allies had destroyed the fourth largest army in the world in a mere 100 hours.[28] The nuclear forces in place arguably deterred Saddam Hussein from using WMD on the coalition troops involved in the conflict, and in the eyes of the nation's leaders, there was no compelling evidence to change the course of the nuclear force.

Fast forward almost 20 years and we find a markedly unchanged and therefore aged nuclear force. The same Dual-Capable Aircraft (DCA) are on the hook to fulfill their TNW mission (only those same aircraft are also fighting in Iraq and Afghanistan, accruing flight hours at a higher rate than ever anticipated), and the same Inter-Continental Ballistic Missiles (ICBMs) sit alert at the same silos in the same Midwestern states, also bumping up against their original expected service lives.[29]

In the near future, the U.S. is going to have to make a decision as to the future make up of the nuclear force, as failures to modernize the Air Force bomber fleet and bomber nuclear weapons have the nation teetering on the edge of a “de facto dyad.”[30] That logic extends to the DCA force as well. The current schedule has the fleet of F-16s remaining in service only through the halfway point of the present decade[31]. The replacement aircraft, the Joint Strike Fighter (JSF) is currently behind schedule, and the Department of Defense has not allocated the money the program needs to modify the aircraft for nuclear use.[32] There are additional issues with the B-61 weapon variant that the JSF will use that fall along the same lines as those used on the bomber fleet. Unless there is a major infusion of capital and priority, maintenance availability rates and system reliability (surety) will render this paper irrelevant: the “de facto dyad”, in which the U.S. relies only on ICBMs and Submarine-Launched Ballistic Missiles (SLBMs) to the exclusion of DCA, will be a reality.

During that same period, the U.S. Defense establishment has worked hard to extricate itself from the DCA role within NATO. U.S. European Command (USEUCOM), once the principal advocate for nuclear weapons in Europe, no longer advocates for these weapons to remain on European soil. The command no longer recognizes the political role for these weapons in NATO.[33] Some senior U.S. military leaders have gone one-step further, contending that “over-the-horizon” capability would be just as credible a deterrent to an attack on NATO.[34] Senator John McCain has also explicitly mentioned withdrawing U.S. nuclear weapons from Europe.[35] The entire situation has been described as “the road to Abilene”, in which logical values fall victim to uncommunicated group dynamics. In this paradox, the passengers on a bus board it because they believe

their Texas destination is what everyone else desires. To the point: the U.S. is prepared to remove DCA but thinks NATO wants to keep them; the other NATO members want them gone, but believes the U.S. expects them to participate (they do not want to be viewed as weak partners).[36]

The fact of the matter is that the relegation of the nuclear mission to the back burner is as much a matter of institutional apathy as fiscal concern. In the early days of the Air Force, the strategic command was at the tip of the spear. They were able to provide security when no one else could due to the imbalance of conventional force between NATO and the Warsaw Pact. In modern times, the conventional forces approach parity, if not superiority. Competition for resources has pushed the old guard into obscurity and along with it its budget and staffing priority.

NATO Nation Defense and Policy Issues

NATO's defense and policy issues run parallel to those of the U.S. for the most part. The DCA employed by the non-U.S. NATO members have many of the same issues as the U.S., as their current aircraft is primarily the F-16, though an older version that has been upgraded to extend its service life to the mid-2010s. The current schedule has the Tornado (their other DCA) exiting service in a similar period[37]. This places them in the unenviable position of having to choose between the American produced JSF and the European produced Eurofighter or Rafal (neither of which are DCA capable)[38]. As with the situation of the U.S., budgets, acquisition strategy, and political pressure to "buy European" will largely determine NATO's future nuclear strategy. The economic down turn and the historically small European defense budgets have exacerbated this problem, and may in fact be the tipping point.

On the political side of the coin, things are somewhat different. According to recent polling, over 69% of Europeans want a nuclear free Europe[39] (though at the same time over 65% did not even know that there were U.S. nuclear weapons on European soil).[40] Germany in particular is anti-nuclear with an overwhelming 80% supporting the removal of TNW from Germany and the discontinuation of DCA as a NATO tactic. Members of the governments of both Germany and Belgium have requested that the U.S. remove the TNWs on their soil as soon as possible.[41]

Within NATO itself, the nuclear enterprise has taken somewhat of a back seat. The Nuclear Planning Group, which is responsible for the planning the deterrence requirements for the 21st century, has reduced its meeting schedule from biannually to annually.[42] The obvious signal is that the alliance focus on the nuclear enterprise has waned, without enough business to warrant meeting twice a year. This is not a surprise, as it appears the preferred political approach to dealing with nuclear weapons and deterrence is to “let sleeping dogs lie”.[43] This affinity for a politically expedient resolution, if you can call it that, lies at the heart of a salient challenge to the alliance: political will.

In order for the deterrence offered by nuclear weapons to be of use, there must be the political will to authorize their use. Given the consensus nature of the alliance and the political control over the release of TNW, the likelihood that SACEUR could recommend and receive approval for a nuclear strike is exceedingly low.[44] The recent experience with mission cancellations in Kosovo and Rules of Engagement mismatches for the ISAF operation in Afghanistan only heighten the concern that the TNWs in NATO

are the toothless tiger that everyone knows in impotent. The fact is that this dynamic only emboldens our potential adversaries in all but the most extreme cases.

Deterrent Force of the Future

While it is clear that the status quo is not an acceptable path to the future, the way ahead is even less clearly marked. Given what we now know of the threat and the alliance members, we can chart a number of courses that are acceptable and represent a balance of military options and political realities.

In the absence of political and economic constraints one could devise an optimum nuclear force that would have attributes necessary to provide a broad array of executable options for political leaders to exercise. What would the force look like if given clean slate? We will look at this initially from the point of view of the U.S., generating a mix of flexible options tailorable to the unique NATO environment. The two main components to a nuclear deterrent capability are the warhead and the delivery platform. There are other key associated components as well (including command and control (C2) and basing, for example), but the legacy systems that are currently in place are satisfactorily functional in most respects.

It is clear, however, that the current selection of warhead yield is not adequate to cover the myriad of scenarios that could arise. The obvious answer would be to develop a new weapon that has a selectable yield from single digit ton to low kiloton. This is not an easy technical hurdle given the fact that the majority of our nuclear design experience is approaching retirement age; coupled with the fact the U.S. has not developed a new nuclear weapon in almost 30 years[45]. The additional ramification of openly violating the Comprehensive Test Ban Treaty (CTBT), to which the U.S. is not a

signatory participant, would require an expenditure of political capital we may not be willing to afford.

Another available option would be to update the Mk-54 warheads. These devices were atomic demolition munitions, produced in the mid-1960s and held in the inventory until 1989, with a selective yield from 10 tons to one kiloton[46]. Updating this warhead to include modern Permissive Action Link (PAL) technology and other modern features would provide the user the bridge between the very low yield spectrum and the current B-61 variant used on the strategic bomber and DCA fleets. The packaging of the warhead in a large bomb body, or unitary ICBM, would mitigate the concern regarding an overly portable nuclear weapon.

Yet another option is the Enhanced Radiation Weapon (ERW) or neutron bomb. The neutron bomb uses a warhead designed to enhance the production of neutrons versus the production of nuclear effects.[47] Under ideal circumstances, weapons designers can tune the reaction to release up to 80% of its energy in the form of radiation. The net effect is a weapon that uses radiation as its primary kill mechanism, limiting the amount of physical collateral damage while reducing both fallout and half-life of the radiation at ground zero.[48] Since fusion creates no residual radiation, the only fall-out would be from the fission reaction that initiates the main reaction. On sub-kiloton bombs, that amount would be very small and given the likelihood that the detonation would be an airburst, the effects would be even smaller. Essentially, personnel wearing nothing more than street cloths could reoccupy the blast area within hours.[49]

The primary reason the U.S. scrapped these weapons in the late 1970s was tied to concerns that available “clean” weapons could reduce the nuclear threshold, which

could in turn start an escalation process that would result in MAD. In today's environment, the availability of executable nuclear options is critical to the deterrent calculus, so perhaps smaller yield weapons are viable after all. They would provide the political leadership with an option that minimizes collateral damage, making the difference between credible deterrence and the paper tiger. The strategic ambiguity of having a less horrible option could make the deterrent more credible.

Regardless of the path chosen to meet the requirement for more precision application of nuclear power, updating or redesigning of the warhead will certainly enhance the maintainability of the unit. Having the warhead is one thing, getting it there is another. The nuclear weapon delivery system is a one trick pony; its only job is to deliver the warhead to the prescribed position at the prescribed time. The only catch is that it has to be able to deliver 100% of the time, regardless of the environment and defenses that it encounters. To achieve that end the system has to be mechanically reliable and physically survivable.

In the age of advanced Surface to Air Missile (SAM) systems and the proliferation of fourth and fifth generation air defense fighters, one should not take this task lightly. Even with the protection from radar-guided threats afforded by stealth, the theory that the bomber always gets through is not always true. Essentially the age of nuclear weapons delivery from manned, air breathing vehicles is over. When a strategic or sub-strategic ballistic missile can deliver the same payload in the same amount of time (or less), there is no reasonable justification one can make that would warrant the use of a more vulnerable manned platform.

Critics contend that one can send a message using aircraft by forward deploying them to a specific area of responsibility or raising their alert status. This posturing sends a message that one cannot send by other means. Strategic submarines (SSBNs) by definition operate out of sight and out of mind. The U.S. stations its ICBM forces in such remote locations that the world would hardly notice an increase in their alert status outside of a very few high plains towns. While there is merit to sending a message by demonstrating an increased posture, the bottom line is that if an aircraft cannot penetrate the airspace to the target, all the posturing in the world does not increase the deterrent capability of the system.

Another consideration in the use of aircraft for nuclear missions is the cost of training and equipping the force. The annual cost of the bomber force to the strategic nuclear triad is nominally $1.7B.[50] If nations add the cost of training and equipping the DCA force, they will end up spending a significant amount of money to gain only a marginal deterrent capability, all in times of intense budgetary pressure. In looking to the future, both fleets require major recapitalization. The bill for the bomber fleet alone through 2050 is approximately $68B.

The bottom line is that an advanced ballistic missile force with a combination of single and multiple warhead vehicles are capable of providing the flexibility, survivability, and surety the nation needs in its nuclear defense force. Additional investment in nuclear capable aircraft will not provide the return on investment the nation requires from its military. In the near term, maintaining a nuclear capability with the B-2 stealth bomber will serve as a satisfactory stopgap measure until sub-kiloton warheads are

available on ballistic missiles. DCA and B-52 aircraft fleets should be decertified for nuclear operations, and focus entirely on their conventional missions.

By default, the status of the NATO DCA should go the way of those of the U.S. Their platforms are no more survivable or maintainable than those in the U.S. fleet, and in many instances are less so due to their age. Their DCA fleets exist in a time when nations are disinclined to spend the money to modernize or replace them.

Wake the Dog and Pick a Path

Atrophy is never the best policy. If the decision is no decision, at some point the previously credible, reliable, and secure deterrent force will cease to be effective at all. In the best case, an evaluation team finds a defect during an inspection, and the only casualty is the affected nation's pride at losing its nuclear certification and having its "nuclear license" permanently revoked. In the worst case, when the alliance needs a nation to fulfill its nuclear responsibility, it is unable to comply due to its inability to generate and employ a viable weapon system. The resulting impact to the credibility of the entire alliance would serve to encourage our enemies and discourage those who rely on the U.S. for protection.

In the words of legendary baseball player and team manager Yogi Berra, "when you come to a fork in the road, take it."[51] This fork in the road leads to three paths, each representing distinctly different overarching policy possibilities available to NATO and the U.S.: denuclearize NATO; maintain the status quo; or reshape the nuclear force. Each path has its own merits and disadvantages.

A Non-Nuclear NATO

On one end of the spectrum, we find the denuclearization of NATO. According to Colin Gray, noted nuclear strategy expert and founder of Washington think tank the

National Institute for Public Policy, “if they (nuclear weapons) did not exist, it is far from certain that NATO would see the need to develop and employ them today.”[52] It is fair to say that this option would be looked upon very favorably my most citizens of the European community, as almost two thirds favor a Europe without nuclear weapons.[53] Additionally, from a political capital point of view the removal of the burden sharing by user nations would serve as a strong endorsement of the NNPT. Many nations see the current burden sharing arrangement as in violation of the treaty, though the arrangement predates the treaty and the members clearly conveyed its stipulations during the negotiation of the treaty.[54]

The unilateral removal of the TNW from Europe would serve as a gesture to the Russians, encouraging them to initiate their own series of unilateral reductions of TNW. It would also serve to remove one of the most significant barriers to NATO enlargement. The Russians would have one less area to be concerned about, since no nuclear weapons in Europe would mean there would be no nuclear weapons in any expanded NATO territories. The final political advantage lies in the fact that a non-nuclear NATO would erase criticism that NATO forces would never use nuclear weapons: there would be none to consider employing. As it is, given the political nature surrounding the use of TNW, it is highly unlikely there would ever be a census that authorized their use under any circumstance. This alignment of the perceived deterrent capability with the actual deterrent capability creates stability in so much as a deterrent that lacks credibility is destabilizing.

The final advantage alliance member nations derive from a non-nuclear NATO is from the cost savings realized by the burden sharing nations. With the dissolution of the

agreement, the nations are not required to maintain a force designated to the protection and operation of nuclear capable units. Maintaining and equipping a nuclear force is extremely expensive, and the burden it places on the defense budget of a small nation is daunting. While there are many advantages to a non-nuclear NATO, there are disadvantages as well.

From a force structure standpoint, the airframes used to fulfill the DCA commitment are also capable of conducting conventional operations. If the removal of TNW from NATO deletes the nation's DCA mission, there is little doubt that nation will delete the portion of their defense budget allocated to the care and feeding of those units as well. The net result might be that the Air Force of each nation would closely oversee the disposition of airframes commensurate with their previous DCA commitment. DCA aircraft might not be re-roled but just stricken from the force. This could represent the reduction of a large percentage of the nation's conventional capability otherwise required for missions such as air policing, interdiction, and close air support (CAS) in support of active and potential ground commitments such as in Afghanistan and in the Balkans.

While at first glance a non-nuclear NATO looks like a boon for the NNPT, there is an outside chance that over time NNWS like Germany, may decide that it is in their best interest to develop their own nuclear capability. That eventuality does not seem likely now, but it makes eminent sense to explore long-term policy implications, and those who are considering the future must consider that type of possibility.

Finally, and most significantly, NATO must rely on unilateral action by the U.S., Great Britain, or France if an unfriendly nuclear power subjects them to some form of

coercion that demands a nuclear response. The lack of burden sharing serves as a barrier to unilateral action by the NWS, and a lack of treaty responsibilities decreases the likelihood that one will intervene. However, there are those of the opinion that the coupling of NATO and the U.S. has already shifted from the nuclear realm to the realm of trade and economies.

Maintain the Status Quo

It is important to differentiate between doing nothing and choosing to maintain a DCA capability. Doing nothing is a cowardly maneuver constructed by politicians in order to avoid taking a stand and make difficult and possibly unpopular choices. Choosing to maintain a DCA capability after active dialogue and careful contemplation is simply that, a choice or course of action.

Many of the advantages of the status quo path lie in their familiarity with those involved, both the deterring and the deterred. For over fifty years, the combination of DCA and other TWS has maintained the peace on the continent. This is the path of least resistance from the politician's point of view, as long as it remains low profile.

Several attributes of the DCA are advantageous. As mentioned above, the airframes are available for conventional use when not specifically assigned to a nuclear mission. DCA have a unique ability to signal intent, and the act of increasing their readiness status all the way through placing them on alert sends a very definite signal to the deterred nation. In addition, the burden sharing arrangement automatically lends legitimacy to any nuclear action taken by NATO. Furthermore, the use of DCA forces an adversary to invest in their Integrated Air Defense System (IADS): a combination of advanced SAMs, C2, and fighter aircraft. Though there are those who believe that our

adversaries are compelled to invest in their IADS out of respect for the threat posed by our conventional forces.

From a purely American point of view, it helps U.S. buy and sell the JSF. As the only viable fifth generation that will be nuclear capable, the DCA nations will help fund the development of the nuclear capability of the aircraft in addition to purchase them which drives down the per unit cost for all involved.

The down sides lie mostly in the deterrent value of the force, due to both survivability issues and the political makeup of the alliance. As mentioned above, the economic impact of maintaining a DCA force is significant when one counts in hardware procurement, maintenance, security and basing, and the training of the aircrew. The return on investment is suspect due to the limited circumstances SACEUR would order a strike due to the political nature of NATO. Add to that the question of platform survivability and the complex nature of forward basing and overflight rights (if the target is out of theater), and the calculus adds up to a miniscule likelihood that the force would ever be used, which in turn reduces the credibility of the deterrent. The result is an extremely high priced gadget that is useful on a one in a million chance that the circumstances align with the political will of the alliance.

Reshape the Nuclear Force

Reshaping NATO's nuclear force is the most radical course of action, involving a move beyond Cold War thought. It is a hybrid combination of the status quo and a non-nuclear NATO. A reshaped NATO nuclear force deletes the DCA portion of the burden sharing arrangement, yet maintains a nuclear NATO. The current NATO Nuclear

Command and Control (NC2) system remains intact, and controls a designated number of warheads delivered by U.S. ballistic missiles or strategic bombers.

The key to the success of this option is the continued improvement of the U.S. nuclear enterprise. The availability of a number of deterrent options is crucial to the credibility of the NATO nuclear force (as well as the U.S. strategic force). The variety of options available mitigates the political ambiguity of NATO and increases the likelihood that the politicians can select a satisfactory option thereby raising the credibility of the deterrent. Burden sharing remains intact as release authority still flows through the current NATO NC2 chain and all nations have de facto buy in to the outcome of the mission.

The European governments would reap the political benefits of denuclearizing their soil, while at the same time encouraging the Russians to reduce their TNW in the theater. As with the full denuclearizing option, the removal of the weapons from Europe removes a barrier to NATO enlargement.

Mechanically, the alliance maintains a viable deterrent threat; ICBMs/SLBMs do not require over flight rights and are presently the most survivable delivery system available. The strategic bomber provides the capability to telegraph intent by forward basing the bombers or increasing their alert posture up to and including airborne alert.

From a financial point of view, the former DCA nations would reap the benefits of the denuclearized option, while suffering the same consequences as well. The concerns over coupling are the same as the denuclearized option, though the globalization of economies has mitigated that argument to a large degree.

It is clear that this policy option represents is the most favorable combination of maximized advantages and minimized disadvantages, for NATO it is a win-win situation. The modified nuclear option leaves NATO with a credible nuclear deterrent capability while reducing the downside liabilities of having the weapons on their soil, delivered by their aircraft. The cost savings to the user nations, as well as the U.S., are significant and welcome in these times of reduced resources and increased demand. Finally, this policy option removes major impedances to negotiations with the Russians, opening the door for further reduction of TNW within the theater.

Conclusion

The reinvigoration of the U.S. nuclear enterprise signals a time for NATO to reevaluate its nuclear status as well. An eradication of the Cold War political mentality will reap significant benefits in the dynamic environment that characterizes the world today, one that is markedly different from the past. Our predecessors would have never imagined failed states and rogue states active in the WMD arena. Non-state actors were regional at best and were not nearly as capable as they have become.

It is clear that the U.S. and NATO must move forward and decide upon a nuclear policy as an act of commission versus omission. There are multiple paths available ranging from the denuclearization of NATO, through the maintenance of the status quo (still requiring a significant investment in both training and materiel) to a complete overhaul of the systems and relationships currently employed by NATO.

The world has changed dramatically since the inception of the alliance; it is clearly time for the alliance to progress with it with an eye for the future, not the past. Reorganizing NATO's nuclear enterprise is unmistakably the path to the future. The advantages of adapting far outweigh the disadvantages; the adoption of this policy will

position NATO to maintain its relevancy into the next century. As the world evolves, NATO must evolve with it. The dog has slept long enough, let us wake him up and pick a path.

Endnotes

[1] CNN, "Air Force officials ousted over nuclear gaffes." June 5, 2008, http://www.cnn.com/2008/POLITICS/06/05/pentagon.firings/index.html (accessed February 15, 2010).

[2] Hans M. Kristensen, Robert S. Norris, Ivan Oelrich. *From Counterforce to Minimal Deterrence.* (Occasional Paper, Washington D.C., Federation of American Scientists, 2009), 14

[3] Useless Movie Quotes,"Dr. Strangelove or: How I Learned to Stop Worrying and Love the Bomb." June 12, 2008. http://www.uselessmoviequotes.com/umq_d010.htm (accessed January 15, 2010).

[4] Amy F. Woolf, *Nonstrategic Nuclear Weapons.* CRS Report for Congress, (Wasington D.C. Congressional Research Service, August 10, 2009), 5.

[5] Keir A. Lieber, Daryl G. Press. "The Nukes We Need." *Foreign Affairs* (November/December 2009), http://www.foreignaffairs.com/articles/65481/keir-a-lieber-and-daryl-g-press/the-nukes-we-need (accessed December 13, 2009), 7.

[6] Ibid

[7] Jeffrey A. Larsen, *The Future of U.S. Non-Strategic Nuclear Weapon,* NATO Manfred Wörner Fellowship Report, (Brussels: NATO Public Diplomacy Division, 2006), 16.

[8] Martin A. Smith, "'In a Box in the Corner?' NATO's Theater Nuclear Weapons, 1989-99," *The Journal of Strategic Studies*, Vol 25, no. 1 (March 2002): 15.

[9] Ward Wilson, "Deterrence and Compellance." Rethinking Nuclear Weapons. April 9, 2009, http://wardhayeswilson.squarespace.com/journal/2009/4/17/deterrence-and-compellence.html (accessed January 12, 2010).

[10] Larsen, 12.

[11] Woolf, 7.

[12] NATO Defense Planning Committee and Nuclear Planning Group, "Final Communiqué," December 6-7, 1990, paragraph 13.

[13] Larsen, xi.

[14] Larsen, 16.

[15] NATO, “NATO's Nuclear Forces in the New Security Environment,” January 24, 2008, http://www.nato.int/ issues/nuclear/sec-environment.html (accessed 10 November 2009)

[16] Kristensen, Norris, Olerich, 7

[17] Tactical Nuclear Weapons book p21

[18] Hans M. Kristensen, "Trends in Nuclear Forces and Doctrine." *Symposium on Strengthening the Nuclear Nonproliferatin Treaty,* (Copenhagen, Denmark: Pugwash 2008), 3.

[19] Ibid

[20] NATO, “NATO's Nuclear Forces in the New Security Environment,” January 24, 2008, http://www.nato.int/ issues/nuclear/sec-environment.html (accessed 10 November 2009)

[21] *Sun Tzu Quotes, The Art of War Quotes,* http://www.military-quotes.com/Sun-Tzu.htm (accessed January 9, 2010).

[22] Lieber, 2.

[23] Ibid

[24] Ibid

[25] Ibid

[26] Lieber, 7.

[27] Larsen, 40.

[28] Ryan, C. "Gulf War." *cryan.com.* http://www.cryan.com/war/ (accessed January 10, 2010).

[29] Dana J. Johnson, Christopher J. Bowie, Robert P. Haffa. *Triad, Dyad, Monad: Shaping the US Nuclear Force of the Future.* Mitchell Paper, (Montgomery, AL: Mitchell Institute Press, 2009), 18.

[30] Johnson, Bowie, Haffa, 3.

[31] Larsen, 43.

[32] James R. Schlesinger, “Report of the Secretary of Defense Task Force on DoD Nuclear Weapons Management: Phase II”, Task Force Report (Washington DC: U.s. Government Printing Office, December 18, 2008), 30.

[33] Woolf, 21.

[34] Ibid

[35] Kristensen, 7.

[36] Larsen, xii.

[37] Larsen, 68.

[38] Ibid

[39] StratCom. "Nuclear Weapons in Europe: Survey Results in Six European Countries", *Greenpeace International.* May 30, 2006, http://www.greenpeace.org/raw/content/international/press/reports/nuclear-weapons-in-europe-survey.pdf (accessed January 12, 2010).

[40] ibid

[41] Spiegel. “Foreigh Minister wants US nukes out of Germany”*, Spiegel Online,* April 10, 2009, http://www.spiegel.de/international/germany/0,1518,618550,00.html (accessed January 6, 2010).

[42] Larsen, 86.

[43] Larsen, 94.

[44] Larsen, 86.

[45] The Nuclear Weapon Archive, "Complete List of All U.S. Nuclear Weapons,” October 14, 2006. http://nuclearweaponarchive.org/Usa/Weapons/Allbombs.html (accessed January 7, 2010).

[46] Ibid

[47] Donald M. Snow, "Strategic Implications of Enhanced Radiation Weapons," September 9, 2002, http://www.airpower.maxwell.af.mil/ airchronicles/aureview/1979/jul-aug/snow.html (accessed January 12, 2010).

[48] Ibid

[49] Ibid

[50] Johnson, Bowie, Haffa, 15

[51] Rink Works, "Things People Said," January 2, 2010, http://www.rinkworks.com/said/yogiberra.shtml (accessed January 8, 2010).

[52] Larsen, 21.

[53] Christopher S. Chivvis, *Recasting NATO's Strategic Concept.* Project Air Force Report, (Santa Monica, CA: RAND Corporation, 2009), 6.

[54] Larsen, 3.